

## REMARKS

In the Official Action mailed on **27 July 2007**, the Examiner reviewed claims 1, 3-4, 7-11, 13, 14, 17-21, 23, 24, and 27-36. Claims 1, 3, 4, 9-11, 13, 14, 19-21, 23, 24, and 29-36 were rejected under 35 U.S.C. § 103(a) based on Ouchi (USPub 2003/0039455, hereinafter “Ouchi”), Robertson et al (USPN 5,857,042 hereinafter “Robertson”), and Yagi (USPN 5,038,354 hereinafter “Yagi”).

### Rejections under 35 U.S.C. § 103(a)

Independent claims 1, 11, and 21 were rejected as being unpatentable over Ouchi in view of Robertson and Yagi. Applicant respectfully disagrees because the annular ring structure in embodiments of the present invention is fundamentally distinct from the light collection multiple diffraction ring in the Yagi system.

Specifically, embodiments of the present invention focus light by passing the light through a repeating an annular ring structure on **multiple chip metallization layers** (see paragraph [0042] and FIG. 6 of the instant application).

In contrast, Yagi is limited to focusing light through a light collection multiple diffraction ring that is produced by growing a p-InGaAs epitaxial layer and removing un-required portion using a common patterning process (see col. 2, ll. 22-35 and FIG. 3 of Yagi) or by forming the light collection multiple diffraction ring on a metal layer (see col. 2-3, ll.66-1 of Yagi). In other words, the light collection multiple diffraction ring in Yagi’s system is formed from a **single layer of epitaxial material or metal** (see FIGs. 3-4 of Yagi).

Moreover, Yagi’s light collection multiple diffraction ring is fundamentally distinct from embodiments of the present invention because the light collection multiple diffraction ring focuses light using diffraction (see col. 2, ll. 22-35 of Yagi), whereas embodiments of the present invention focus light using

a series of annuli repeated on multiple metallization layers to reduce transverse spreading of the optical energy (see paragraph [0042] of the instant application).

In addition, Ouchi discloses a waveguide apparatus facilitating the alignment between an optical device and an optical path converting unit, an optical device, and an opto-electric mixture wiring substrate (see paragraph [0008] of Ouchi). **A two-dimensional slab waveguide is used to guide light** between the transmitters and the receivers (see paragraph [0071] of Ouchi). No annular structure is used to focus light.

On the other hand, Robertson discloses an optical interconnection arrangement comprises a plurality of substantially parallel optical interconnection channels (see abstract of Robertson). However, in the Robertson system **lenslets are used to collimate light** (see col. 3, ll. 14-22 and FIGs. 3-8 of Robertson). Nothing in Robertson discloses annuli repeated on multiple metallization layers on the first semiconductor die configured to focus the optical signal onto the second semiconductor die.

There is nothing in Ouchi, Robinson, and Yagi, either express or implied, which suggests passing an optical signal through annuli repeated on multiple chip metallization layers on a first semiconductor die to focus the optical signal onto a second semiconductor die.

Accordingly, Applicant has amended claims 1, 11, and 21 to clarify that the annular ring structure is repeated on multiple chip metallization layers. These amendments find supports in paragraph [0042] and FIG. 6 of the instant application. No new matter has been added.

Hence, Applicant respectfully submits that independent claims 1, 11, and 21 as presented are in condition for allowance. Applicant also submits that claims 3-10, 31 and 34, which depend upon claim 1, claims 13-20, 32 and 35, which depend upon claim 11, and claims 23-30, 33 and 36, which depend upon

claim 21, are for the same reasons in condition for allowance and for reasons of the unique combinations recited in such claims.

### **CONCLUSION**

It is submitted that the present application is presently in form for allowance. Such action is respectfully requested.

Respectfully submitted,

By /Anthony Jones/  
Anthony Jones  
Registration No. 59,521

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Anthony Jones  
Park, Vaughan & Fleming LLP  
2820 Fifth Street  
Davis, CA 95618-7759  
Tel: (530) 759-1666  
Fax: (530) 759-1665  
Email: tony@parklegal.com